IN THE CLAIMS:

Claim 1 (currently amended): An optical information recording device which irradiates information light holding information and reference light onto a recording medium using an object lens, causes interference in the information recording layer of the recording medium, and records information using the resultant interference patterns, comprising:

a first spatial light modulator for generating said information light by spatially modulating light from a light source by a plurality of pixels; and

a second spatial light modulator for generating said reference light by spatially modulating light from the light source by a plurality of pixels; wherein

the area of said information light and the area of said reference light on the entrance pupil surface of said object lens are formed such that one area surrounds the other area, and

said reference light is spatially modulated by said second spatial light modulator such that ~~interferance is not easily generated between said reference lights in said information recording layer~~ the traveling direction of said reference light is directed in a direction other than the optical axis direction of the optical system.

Claim 2 (original): An optical information recording device which irradiates information light holding information and reference light onto a recording medium using an object lens, causes interference in the information recording layer of the recording medium, and records information using the resultant interference patterns, comprising:

a first spatial light modulator for generating said information light by spatially modulating light from a light source by a plurality of pixels and

a second spatial light modulator for generating the reference light by spatially modulating light from the light source by a plurality of pixels; wherein

the area of said reference light on the entrance pupil surface of said object lens is formed such as to surround the area of said information light, and

said reference light is spatially modulated into a plurality of radial patterns spreading radially from the area of said information light, in the area of said reference light, by said second spatial light modulator.

Claim 3 (currently amended): An optical information recording device which irradiates information light holding information and reference light onto a recording medium using an object lens, causes interference in the information recording layer of the recording medium, and records information using the resultant interference patterns, comprising:

a first spatial light modulator for generating said information light by spatially modulating light from a light source by a plurality of pixels; and

a second spatial light modulator for generating said reference light by spatially modulating ~~the intensity of the~~ light from the light source by a plurality of pixels; wherein

the area of said reference light on the entrance pupil surface of said object lens is formed such as to surround the area of said information light, and

said reference light is spatially modulated by said second spatial light modulator such that said reference light area on the entrance pupil surface of said object lens is formed asymmetrical to a virtual center point of said reference light area.

Claim 4 (original): The optical information recording device according to any one of claims 1 to 3, wherein said first spatial light modulator and said second spatial light modulator comprise a first display area and a second display area of a shared spatial light modulator, respectively.

Claim 5 (original): The optical information recording device according to claim 4, wherein said spatial light modulator comprises a plurality of pixels which can modulate the intensity of light, and the phases of emission lights vary according to the positions of a plurality of said pixels.

Claim 6 (currently amended): The optical information recording device according to claim [[5]]1, wherein the phase distribution of [[the]] said reference light ~~emission light from said spatial light modulator~~ has [[the]] a cyclic pattern ~~which deflects the traveling direction of said reference light in a direction other than the optical axis direction of the optical system~~.

Claim 7 (currently amended): An optical information recording method which irradiates information light holding information and reference light onto a recording medium

using an object lens, causes interference in the information recording layer of the recording medium, and records information using the resultant interference patterns, wherein:

both said information light and said reference light are spatially modulated by a plurality of pixels;

the area of said information light and the area of said reference light on the entrance pupil surface of said object lens are formed such that one area surrounds the other area; and

said reference light is spatially modulated by said plurality of pixels such that ~~interference is not easily generated between the reference lights in said information recording layer~~ the traveling direction of said reference light is directed in a direction other than the optical axis direction of the optical system.

Claim 8 (original): An optical information recording method which irradiates information light holding information and reference light onto a recording medium using an object lens, causes interference in the information recording layer of the recording medium, and records information using the resultant interference patterns, wherein:

both said information light and said reference light are spatially modulated by a plurality of pixels;

the area of said reference light on the entrance pupil surface of said object lens is formed such as to surround the area of said information light; and

said reference light is spatially modulated into a plurality of radial patterns spreading radially from the area of said information light, in the area of said reference light.

Claim 9 (original): The optical information recording method according to claim 8, wherein the center of the area of said information light, the center of the area of said reference light, and the virtual center point of said plurality of radial patterns are the optical axes of the optical system.

Claim 10 (currently amended): The optical information recording method according to claim 8, wherein a plurality of reference lights with differing pattern-forms are formed by ~~changing the~~ having different virtual center [[angle]] angles between a plurality of said radial

patterns or by rotating said plurality of radial patterns with the virtual center point as a center of rotation, and multiplex recording of a plurality of interference patterns are performed in a plurality of superimposed areas within said information recording layer using said plurality of reference lights with differing ~~pattern forms~~ patterns.

Claim 11 (original): An optical information recording method which irradiates information light holding information and reference light onto a recording medium using an object lens, causes interference in the information recording layer of the recording medium, and records information using the resultant interference patterns, wherein:

both said information light and said reference light are spatially modulated by a plurality of pixels; and

the area of said reference light on the entrance pupil surface of said object lens is formed such as to surround the area of said information light and is asymmetrical to the center of the area of said reference light, as well.

Claim 12 (canceled).

Claim 13 (canceled).

Claim 14 (currently amended): The optical information recording method according to any one of claims 7 to [[13]]11, wherein both said information light and said reference light are spatially modulated by the same spatial light modulator.

Claim 15 (original): The optical information recording method according to claim 14, wherein the light intensity and phase of said reference light are spatially modulated by said spatial light modulator.

Claim 16 (currently amended): The optical information recording method according to claim 15, wherein the phase distribution ~~the traveling direction~~ of said reference light has a cyclic pattern ~~is deflected in a direction other than the optical axis direction of the optical system by said spatial light modulator~~.

Claim 17 (currently amended): An optical information reproduction device for ~~generating reproduction light holding information and~~ reproducing the information from a recording medium having an information recording layer in which the information is recorded in the form of interference pattern ~~by irradiating reference light onto a recording medium through an object lens and making the reference light interfere with the interference patterns recorded on the information recording layer of the recording medium~~, comprising:

a light source,

a spatial light modulator for generating [[said]] a reference light by spatially modulating light from [[a]] said light source by a plurality of pixels,

an object lens for irradiating said reference light onto the interference pattern recorded on the information recording layer of the recording medium and passing through a return light from the recording medium including a reproduction light generated by interference of said reference light and the interference pattern, and

an optical detector for detecting said reproduction light; wherein

the area of said reference light on the entrance pupil surface of said object lens regarding said reference light and the area of said reproduction light on this entrance pupil surface are formed such that one area surrounds the other area, and

said reference light is spatially modulated by said spatial light modulator such that the traveling direction of said reference light is directed in a direction other than the optical axis direction of the optical system ~~interference is not easily generated between reference lights in said information recording layer~~.

Claim 18 (currently amended): An optical information reproduction device for ~~generating reproduction light holding information and~~ reproducing the information ~~by irradiating reference light onto~~ from a recording medium having an information recording layer in which the information is recorded in the form of ~~through an object lens and making the reference light interfere with the~~ interference pattern ~~recorded on the information recording layer of the recording medium~~, comprising:

a light source,

a spatial light modulator for generating [[said]] a reference light by spatially modulating light from [[a]] said light source by a plurality of pixels,

an object lens for irradiating said reference light onto the interference pattern recorded on the information recording layer of the recording medium and passing through a return light from the recording medium including a reproduction light generated by interference of said reference light and the interference pattern, and

an optical detector for detecting said reproduction light; wherein

the area of said reference light on the entrance pupil surface of said object lens regarding said reference light is formed such as to surround the area of said reproduction light on this entrance pupil surface, and

said reference light is spatially modulated into a plurality of radial patterns spreading radially from the area of said reproduction light in the area of said reference light by said spatial light modulator.

Claim 19 (currently amended): An optical information reproduction device for ~~generating reproduction light holding information and~~ reproducing the information ~~by irradiating reference light onto~~ from a recording medium ~~through an object lens and making the reference light interfere with the interference patters recorded on the~~ having an information recording layer in which the information is recorded in the form of interference pattern, comprising:

a light source,

a spatial light modulator for generating [[said]] a reference light by spatially modulating light from [[a]] said light source by a plurality of pixels,

an object lens for irradiating said reference light onto the interference pattern recorded on the information recording layer of the recording medium and passing through a return light from the recording medium including a reproduction light generated by interference of said reference light and the interference pattern, and

an optical detector for detecting said reproduction light; wherein

the area of said reference light on the entrance pupil surface of said object lens regarding said reference light is formed such as to surround [[and]] the area of said

reproduction light on this entrance pupil surface ~~are formed such that one area surrounds the other area~~,and

said reference light is spatially modulated by said second spatial light modulator such that said reference light area on the entrance pupil surface of said object lens is formed asymmetrical to a virtual center point of said reference light area.

Claim 20 (original): The optical information reproduction device according to any one of claims 17 to 19, wherein said spatial light modulator comprises a plurality of pixels which can modulate the intensities of lights, and the phases of emission lights vary according to the positions of a plurality of said pixels.

Claim 21 (currently amended): The optical information reproduction device according to claim 20, wherein [[the]] the phase distribution of said reference light ~~the emission light from said spatial light modulator~~ has [[the]] a cyclic pattern ~~which deflects the traveling direction of said reference light in a direction other than the optical axis direction of the optical system~~.

Claim 22 (currently amended): An optical information reproduction method for ~~generating reproduction light holding information and~~ reproducing the information from ~~by irradiating reference light onto~~ a recording medium having an information recording layer in which the information is recorded in the form of interference pattern ~~through an object lens and making said reference light interfere with said interference patterns recorded on the information recording layer of said recording medium~~, wherein:

generating [[said]] a reference light by spatially modulating light from a light source by a plurality of pixels,

irradiating said reference light onto the interference pattern recorded on the information recording layer of the recording medium by an object lens,

passing through a return light from the recording medium including a reproduction light generated by interference of said reference light and the interference pattern into said object lens, and

detecting said reproduction light by an optical detector; ~~is spatially modulated by a plurality of pixels;~~

the area of said reference light on the entrance pupil surface of said object lens regarding said reference light and the area of said reproduction light on this entrance pupil surface are formed such that one area surrounds the other area; and

said reference light is spatially modulated by said plurality of pixels ~~spatial light modulator~~ such that the traveling direction of said reference light is directed in a direction other than the optical axis direction of the optical system ~~interference is not easily generated between reference lights in said information recording layer~~.

Claim 23 (currently amended): An optical information reproduction method for ~~generating reproduction light holding information and~~ reproducing the information ~~by irradiating reference light onto~~ from a recording medium having an information recording layer in which the information is recorded in the form of interference pattern ~~through an object lens and making said reference light interfere with said interference patterns recorded on the information recording layer of said recording medium~~, wherein:

generating [[said]] a reference light [[is]] by spatially ~~modulated~~ modulating light from a light source by a plurality of pixels,

irradiating said reference light onto the interference pattern recorded on the information recording layer of the recording medium by an object lens,

passing through a return light from the recording medium including a reproduction light generated by interference of said reference light and the interference pattern into said object lens, and

detecting said reproduction light by an optical detector;

the area of said reference light on the entrance pupil surface of said object lens regarding said reference light is formed such as to surround the area of said reproduction light on this entrance pupil surface; and

said reference light is spatially modulated into a plurality of radial patterns spreading radially from the area of said reproduction light in the area of said reference light.

Claim 24 (original): The optical information reproduction method according to claim 23, wherein the center of the area of said reference light and the virtual center point of said plurality of radial patterns are optical axes of the optical system.

Claim 25 (currently amended): An optical information reproduction method for ~~generating reproduction light holding information and~~ reproducing the information from a recording medium having an information recording layer in which the information is recorded in the form of interference pattern ~~by irradiating reference light onto a recoding medium through an object lens and making said reference light interfere with said interference patterns recorded on the information recording layer of said recording medium~~, wherein:

generating [[said]] a reference light [[is]] by spatially ~~modulated~~ modulating light from a light source by a plurality of pixels,

irradiating said reference light onto the interference pattern recorded on the information recording layer of the recording medium by an object lens,

passing through a return light from the recording medium including a reproduction light generated by interference of said reference light and the interference pattern into said object lens, and

detecting said reproduction light by an optical detector; and

the area of said reference light on the entrance pupil surface of said object lens regarding said reference light is formed such as to surround the area of said reproduction light on this entrance pupil surface and is asymmetrical to the center of the area of said reference light, as well.

Claim 26 (canceled).

Claim 27 (currently amended): The optical information reproduction method according to any one of claims 22 to [[26]]25, wherein the light intensity and phase of said reference light are spatially modulated by a spatial light modulator.

Claim 28 (currently amended): The optical information reproduction method according to claim 27, wherein the phase distribution ~~traveling direction~~ of said reference

light has a cyclic pattern ~~is deflected in a direction other than the optical axis direction of the optical system by said spatial light modulator~~.

Claim 29 (currently amended): The optical information recording device according to any one of claims 1 to [[6]]3, comprising:

a servo light source which differs from the light source for recording information to said recording medium; and

a servo information acquisition means for obtaining address servo information recorded to said recording medium by the light from said servo light source.

Claim 30 (currently amended): The optical information reproduction device according to any one of claims 17 to [[21]]19, comprising:

a servo light source which differs from the light source for recording information to said recording medium; and

a servo information acquisition means for obtaining address servo information recorded to said recording medium by the light from said servo light source.